

Notes on bird distribution in northeastern Dpto. Santa Cruz, Bolivia, with 15 species new to Bolivia

by John M. Bates, Mary C. Garvin, Donna C. Schmitt & C. Gregory Schmitt

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From 30 June to 12 August 1988, an expedition from the Louisiana State University of Natural Science (LSUMZ), in conjunction with personnel from the Parque Nacional Noel Kempff Mercado, surveyed the avifauna at 3 sites in the lowland rainforest to the west of the Serranía de Huanchaca, Dpto. Santa Cruz, in extreme eastern Bolivia near the Brazilian border. The 3 sites were: (1) **Los Fierros**, 30 km E Aserradero Moira (14°30'S, 61°10'W; elev. 450 m); this area contained broken-canopy, lowland tropical forest averaging 30 m tall, the terrain being flat and the understorey difficult to walk through because of heavy vine tangles. (2) **Arroyo del Encanto**, 30 km E Florida (14°30'S, 60°40'W; elev. 550 m), alongside a rocky stream that flowed off the Serranía 5 km to the east; the forest in this hilly terrain was slightly wetter, with more epiphytic vegetation than the previous site and contained scattered sections of 40 m-tall forest. (3) **The west bank of the Río Paucerna**, 4 km upstream from its confluence with the Río Itenez (13°43'S, 61°11'W; elev. 450 m); the forest here was stunted (5–15 m) with large patches of bamboo along the river.

We observed 15 species not previously recorded in Bolivia and 7 not previously recorded west of the Madera/Guaporé rivers. Fourteen of these species had previously been recorded as close as Cachoeira Nazaré, Rio Ji-Paraná, Rondonia, Brazil (9°44'S, 61°53'W—D. F. Stotz *et al.* unpubl. data). Prior to our work, we assumed that the western limit of these 'Rondonian' taxa was the Madeira/Guaporé rivers; however, our work suggests that some of them cross the upper Guaporé where its reduced width constitutes less of a barrier to bird dispersal. The barrier to westward dispersal may be the Río Beni or the Río Madre de Dios to the northwest.

The taxonomic affinities of birds in this region are important for understanding the zoogeography of the southern Amazon basin. Although geographic variation in bird populations going from east to west across the Madeira/Guaporé rivers includes several allopatric species-level replacements (*Pipile cujubi* by *P. cumanensis*, *Pteroglossus bitorquatus* by *P. flavirostris mariae*, *Selenidera maculirostris* by *S. reinwardtii*, *Xiphorhynchus elegans* by *X. spixii*, *Dendrocolaptes concolor* by *D. certhia* and *Pipra nattereri* by *P. coronata*), other species appear to be undifferentiated (*Northarchus tectus*, *Picus flavigula* and *Hylophilus semicinereus*). Initial indicators from our inventories suggest that many subspecies in this region were known previously only westward as far as the western bank of the Río Madera. Other important findings of our survey were the presence of several widespread Amazonian species (*Leucopternis kuhli*, *Myrmotherula surinamensis*, *Formicarius colma*,

Ornithion inerme, *Chiroxiphia pareola regina*) that were only recently recorded for the first time in Bolivia (in Dpto. Pando—Parker & Remsen 1987).

All specimens are housed at the LSUMZ and the Museo de Historia Natural 'Noel Kempff Mercado', Santa Cruz, Bolivia. In addition to collecting specimens, an effort was made at each locality to tape-record nocturnal birds, tinamous, dawn choruses and mixed-species flocks whenever possible. Analysis of these tapes by T. A. Parker resulted in the addition of 20 species to our list, including the first record for Bolivia of Black-girdled Barbet *Capito dayii*. All sound recordings are housed at the Library of Natural Sounds (LNS), Laboratory of Ornithology, Cornell University. Four locality lists, including the 3 collecting sites and species recorded from a boat on the Guaporé river between the town of Piso Firme and the mouth of the Río Paucerna, are presented in the Appendix. Below, are details on the species new to Bolivia and several other poorly known species.

ZIGZAG HERON *Zebrilus undulatus*

CGS collected a ♀ on 2 Aug at the edge of a shaded water-filled depression 40 m from the banks of the Río Paucerna, only the second specimen record for Bolivia; the first was collected in Dpto. Beni by Pearson (1975).

RED-THROATED PIPING GUAN *Aburria kujubi*

Encountered almost daily at sites 1–2 and fairly common at site 3. The presence of these large gamebirds, along with numbers of Spix's Guan *Penelope jacquaçu* and Spider Monkeys *Ateles paniscus*, suggests that despite much logging in parts of the region, little hunting has occurred.

CRIMSON-BELLIED PARROT *Pyrrhura rhodogaster*

On 14 and 17 Jul 2 specimens were collected by MCG at Arroyo del Encanto. Flocks of 6–15 individuals were seen daily at sites 1–2. In stunted forest along the Río Paucerna, only the smaller *P. picta* was recorded. Both species were common along Río Ji-Paraná, Rondonia (D. F. Stotz *et al.* unpubl. data). *P. rhodogaster* was previously known only from Brazil between the Madeira and Tapajos rivers (Meyer de Schauensee 1966).

BAND-TAILED NIGHTHAWK *Nyctiprogne leucopyga*

On the evenings of 28, 29 Jul and 12 Aug, up to 6 individuals were seen at dusk flying low over the Río Itenez. Previously known from several localities in adjacent Mato Grosso, Brazil, where it is common along rivers in the pantanal south and west of Cuiabá, Brazil (T. A. Parker).

BROWN JACAMAR *Brachygalba lugubris*

CGS collected 4 along the banks of the Río Paucerna from 20 m up in canopy adjacent to the river. The only other published Bolivian record is also for Santa Cruz (Sclater & Salvin 1879, Remsen & Traylor in press).

PIED PUFFBIRD *Northarchus tectus*

A ♂ and ♀ were collected by JMB and CGS on 30 Jun and 1 Jul from emergent-canopy trees along a road through rainforest at Los Fierros. This is the southernmost record for this widespread species, which is

found throughout Amazonia, the Guianas, and southern Middle America (Meyer de Schauensee 1966).

BLACK-GIRDLED BARBET *Capito dayi*

A bird was tape-recorded by JMB in the canopy of tall forest at Arroyo dee Encanto on 14 Jul and was later identified by T. A. Parker as this species. The song consisted of a series of rough, guttural notes ("groh-groh-groh-groh") similar to those of *C. aurovirens*. *C. dayi* was previously reported from central Brazil south of the Amazon in a small area at the headwaters of the Madeira and Tapajos rivers (Meyer de Schauensee 1966). It was fairly common along the Río Ji-Paraná (D. F. Stotz *et al.* unpubl. data).

RED-NECKED ARACARI *Pteroglossus bitorquatus*

Fairly common at Arroyo del Encanto, where 8 specimens were collected. An individual was also seen flying over the Río Guaporé on 29 Jul, and another collected at site 3 on 6 Aug. Recorded once before in this area (Cabot *et al.* in press)—the first record for Bolivia.

SPOT-BILLED TOUCANET *Selenidera gouldii*

2♀ and a ♂ were collected by JMB and CGS on 13, 17 and 18 Jul in hillside forest at site 2; others were heard there and at site 1, but the species was not recorded every day. The voice (a frog-like croaking "gyow-gyow-gyow") is like that of its allospecies *S. reinwardtii*, known from northern Bolivia in Dpto. Pando (Parker & Remsen 1987). Peters (1948) considered *S. gouldii* to be one of 3 subspecies of *S. maculirostris*. Haffer (1974), on the other hand, merged the 2 northern subspecies, *S. m. hellmayri* (Griscom & Greenway 1937) and *S. m. gouldii* to create *S. gouldii*.

YELLOW-THROATED WOODPECKER *Piculus flavigula*

JMB and CGS collected 2 on 30 Jul and 3 Aug (LSUMZ) from low forest adjacent to the Río Paucerna. This species ranges throughout the Amazon basin (Meyer de Schauensee 1966), being most numerous in tall riverine forest and less common in upland terra firme forest (T. A. Parker).

RED-BILLED WOODCREEPER *Hylexetastes perrotii*

One was netted in forest at site 1 on 3 Jul. This species and *Hemitriccus minor* (see below) both occur on both banks of the Amazon: in the north to the Río Negro, and in the south between the Madeira and Tapajos rivers (Meyer de Schauensee 1966), being replaced to the west of the Río Madeira by *H. stresemanni*, known in Bolivia only from Dpto. Pando (Parker & Remsen 1987).

PANCOLOR WOODCREEPER *Dendrocolaptes concolor*

Three were netted at site 1 on 1 Jul. A single specimen also was netted from upland forest along the Río Paucerna on 19 Jul. This member of the *D. certhia* complex was uncommon at the Rondonia site (D. F. Stotz *et al.* unpubl. data) and was known previously only from between the Madeira and Tocantins rivers (Meyer de Schauensee 1966).

ELEGANT WOODCREEPER *Xiphorhynchus elegans*

Frequently netted in tall forest at sites 1 & 2, 7 specimens being obtained from each site. Meyer de Schauensee (1966) reported this

species from the Dpto. Beni, though Remsen & Traylor (in press) find no record to report in Bolivia, but suggest that it could occur there between the Beni and Guaporé rivers. Our records are from the eastern edge of that region. The species ranges east to the Río Tapajos in Brazil (Meyer de Schauensee 1966) and was common at the Rondonia site (D. F. Stotz *et al.* unpubl. data).

SATURNINE ANTSHRIKE *Thamnomanes saturninus*

Five specimens were obtained. Encountered uncommonly in forest undergrowth at all 3 sites, and always noted in the forest undergrowth in mixed-species flocks that contained woodcreepers, antwrens and flycatchers. Compared with other Amazonian forests, our study sites contained few such flocks. *T. saturninus* is widespread south of the Amazon basin, from northeastern Peru east to the Río Tocantins (Meyer de Schauensee 1966).

SNETHLAGE'S TODY-TYRANT *Hemitriccus minor*

Common in open forest understory at all 3 sites. Fourteen specimens were obtained. Like *Hylexetastes perrotii* (see above), *Hemitriccus minor* is found north of the Amazon to the west of the Río Negro to southwestern Surinam and south of the Amazon from the Río Juruá to the Río Tocantins; it was known previously from both Rondonia and Mato Grosso in Brazil (Traylor 1979).

FLAME-CROWNED MANAKIN *Heterocercus linteatus*

Nine were netted in or adjacent to 3–4 m-tall bamboo in stunted forest along the Río Paucerna. Considered to be rare at the Rondonia site (T. S. Schulenberg). Previously it was known only from Amazonian Brazil south of the Amazon and from one site in northeastern Peru (Snow 1979).

SNOWY-CAPPED MANAKIN *Pipra nattereri*

Captured fairly frequently in mist nets at site 1 and less frequently at the other 2 sites; 19 specimens were obtained. Previously, the species was known only from between the Madeira and Tapajos rivers (Meyer de Schauensee 1966).

GRAY-CHESTED GREENLET *Hylophilus semicinereus*

CGS collected a ♂ on 31 Jul from river-edge forest on the Río Paucerna, where several individuals were also tape-recorded by JMB. These are the southernmost records of this species, which occurs throughout eastern Amazonia (Meyer de Schauensee 1966).

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Address: John M. Bates, Mary C. Garvin, Donna C. Schmitt, C. Gregory Schmitt, Museum of Natural Science, 119 Foster Hall, Louisiana State University, Baton Rouge, LA 3216, 70803, USA.

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Appendix

The following lists are for the 3 sites in the Parque Nacional Noel Kempf Mercado described in the text and species seen from a boat on the Guaporé river. *Column 1*: Los Fierros (14°25'S, 61°10'W); *Column 2*: Arroyo del Encanto (14°30'S, 60°40'W); *Column 3*: Río Paucerna (13°43'S, 61°11'W); *Column 4*: Río Guaporé. Relative abundances were estimated for all species seen at each site; **R**=rare, encountered only once or twice; **U**=uncommon, found in small numbers and not seen every day; **FC**=fairly common, encountered irregularly in numbers or a few individuals seen almost every day; **C**=common, several individuals encountered daily. Average weights (gm) of adult birds (M=Male, F=Female) are given for specimens collected; sample sizes and ranges are given in parentheses, followed by the standard deviation when samples were large enough. Species marked with an asterisk were seen but not collected. Species documented by tape-recording are indicated by a double asterisk.

	Sites				Body weights (gm)
	1	2	3	4	
<i>Rhea americana</i> *			R		
<i>Tinamus tao</i>			R	R	
<i>Crypturellus cinereus</i>	U	R			
<i>Crypturellus soui</i>		FC	FC	FC	
<i>Crypturellus undulatus</i>	U	U	U		
<i>Crypturellus strigulosus</i> **	R	R	R		M, 390(1)
<i>Phalacrocorax olivaceus</i> *				C	
<i>Anhinga anhinga</i> *				C	
<i>Zebrilus undulatus</i>			R		F, 144(1)
<i>Tigrisoma lineatum</i>	R	R	R	FC	
<i>Ptilerodius pileatus</i>	R			FC	
<i>Ardea cocoi</i>			U	C	
<i>Casmerodius albus</i> *			R	C	
<i>Bubulcus ibis</i> *			U	U	
<i>Egretta thula</i>			U	C	M, 320(1)
<i>Butorides striatus</i>			U	C	M, 190(1); F, 210(1)
<i>Agamia agami</i>				R	M, 700(1)
<i>Nycticorax nycticorax</i> *				U	
<i>Cochlearius cochlearius</i>				R	
<i>Mycteria americana</i> *				R	
<i>Jabiru mycteria</i> *				R	
<i>Mesembrinibis cayennensis</i> *			R	R	

	Sites				Body weights (gm)
	1	2	3	4	
<i>Chauna torquata</i> *				FC	
<i>Cairina moschata</i> *				C	
<i>Coragyps atratus</i> *	R			C	
<i>Cathartes aura</i> *	U	U	U	C	
<i>Cathartes melambrotus</i> *			U	FC	
<i>Sarcoramphus papa</i> *	R	R			
<i>Pandion haliaetus</i> *				U	
<i>Elanoides forticatus</i> *	U				
<i>Elanus caeruleus</i> *		R			
<i>Rosthamus sociabilis</i> *				FC	
<i>Leucopternis kuhli</i> *	R	R			
<i>Buteogallus urubitinga</i> *			R	U	
<i>Busarellus nigricollis</i> *				R	
<i>Buteo magnirostris</i>	U	U		FC	F, 312.5(2:310,315)
<i>Spizaetus tyrannus</i> **				R	
<i>Daptrius ater</i> *	U	U	U		
<i>Daptrius americanus</i>	FC	R	U		F, 695(1)
<i>Polyborus plancus</i> *	R			U	
<i>Herpetotheres cachimans</i> *				R	
<i>Micrastur gilvicollis</i>			U		M, 186(1); F, 240(1)
<i>Falco rufigularis</i>	U	U	R	U	M, 130(1); F, 200(1)
<i>Penelope jacquacu</i>	FC	FC	U		M, 1400(1); F, 1200(1)
<i>Aburria cububi</i>	FC	FC	U		
<i>Crax mitu</i> *			R		
<i>Odontophorus stellatus</i>	U	U	R		
<i>Aramus guarana</i> *				FC	
<i>Aramides cajana</i> *			R	FC	
<i>Eurypyga helias</i> *			R		
<i>Jacana jacana</i> *				U	
<i>Vanellus cayanus</i>			R	U	M, 73(1)
<i>Charadrius collaris</i> *				R	
<i>Phaetusa simplex</i> *				C	
<i>Sterna superciliiaris</i> *				FC	
<i>Rynchops niger</i> *				U	
<i>Columba speciosa</i>	C	C			M, 190(1); F, 280(1)
<i>Columba plumbea</i>	U	U	U	U?	M, 174(1)
<i>Columba subvinea</i>	FC	FC	FC	FC?	M, 169(3:160-185) ± 14.1
<i>Claravis pretiosa</i>	R	U	FC		M, 63.6(6:60-68) ± 3.4; F, 59.2(8:48-75) ± 8.2 M, 163(1)
<i>Leptotila rufaxilla</i>	U	U	R		
<i>Geotrygon violacea</i>	R				
<i>Geotrygon montana</i>	R	U	U		M, 110.6(5:108-125) ± 11.7; F, 94.7(3:83-103) ± 10.4
<i>Ara araruana</i> *	FC	FC	FC	FC	
<i>Ara macao</i> *		R			
<i>Ara chloroptera</i> *	R	R	R		
<i>Ara severa</i> *	?	?	?	R	
<i>Aratinga sp.</i> *	U	U	C	C	
<i>Pyrrhura picta</i>			FC		M, 69(1); F, 85(1)
<i>Pyrrhura rhodogaster</i>	U	FC			M, 102(1); F, 102(1)
<i>Brotogeris versicolurus</i>			C	C	M, 52.5(1); F, 68.3(1)
<i>Brotogeris cyanoptera</i>		U?			
<i>Pionites leucogaster</i> **			R		
<i>Pionus menstruus</i>	C	C	C	C	M, 254(2:248,260)
<i>Amazona ochrocephala</i>	?	?	U	U	M, 340(1)
<i>Amazona farinosa</i> *	?	?	U	?	
<i>Piaya cayana</i>	FC	FC	FC		M, 103(2:102,104); F, 119(2:104,134)
<i>Crotophaga major</i> *				U	
<i>Crotophaga ani</i>				C	M, 80(1)
<i>Tapera naevia</i>	R	R			
<i>Dromococcyx phasianellus</i> **		R			
<i>Neomorphus geoffreyi</i> *		R			
<i>Opisthocomus hoazin</i> *				R	
<i>Lophostrix cristatus</i> **		R	R		
<i>Otus teatoni</i> **	U	U	R		
<i>Pulsatrix perspicillata</i> *	R	R	R		
<i>Ciccaba virgata</i> *			R?		
<i>Nyctibius grandis</i> **	R	R	R		
<i>Nyctibius griseus</i> *	R				
<i>Nyctiprogne leucopyga</i> *				U	
<i>Nyctidromus albigollis</i>			R		F, 50(1)
<i>Nyctiphrynus ocellatus</i>	R	R			M, 35(2:35,35)
<i>Hydropsalis brasiliiana</i>	U				M, 58(1)
<i>Chaetura brachyura</i> *					
<i>Chaetura sp.</i> *		U	FC		
<i>Glaucis hirsuta</i>			U		M, 6.7(3:6-7) ± 0.6; F, 5.8(5:5-8) ± 0.3
<i>Phaethornis hispidus</i>	U	U			M, 5.1(3:5-5.2) ± 0.1; F, 4.5(3:4-5) ± 0.5
<i>Phaethornis (nattereri)?</i>			R		
<i>Phaethornis ruber</i>	C	C	FC		F, 2.2(3:2-2.5) ± 0.3

	Sites				Body weights (gm)
	1	2	3	4	
<i>Florisuga mellivora</i> *			R		
<i>Anthracothonax nigricollis</i>			U		M, 7(1); F, 7(1)
<i>Thalurania furcata</i>	U	U	U		M, 4(3:4-4); F, 4.0(3:3.5-4.5) ± 0.5
<i>Hylocharis saphirina</i>			R		M, 5(1)
<i>Hylocharis cyanus</i>	U	FC	C		M, 3.7(3:3.5-4) ± 0.3; F, 4(1)
<i>Heliotryx aurita</i> *	R				
<i>Trogon melanurus</i>	U	U	U		M, 107(2:100,114); F, 118(1)
<i>Trogon viridis</i>	U	U	U		M, 88(1)
<i>Trogon collaris</i>	U	U	U		
<i>Trogon violaceus</i> **	U				
<i>Momotus motmota</i>	R	U	U		M, 107.5(2:104,111); F, 102.5(4:98-110) ± 5.2
<i>Ceryle torquata</i> *	R		FC		
<i>Chloroceryle amazona</i>			FC	C	F, 119.5(2)
<i>Chloroceryle americana</i>			FC	C	M, 29(1); F, 30.2(3)
<i>Chloroceryle inda</i>		R	R		M, 55(1); F, 62.5(2:60,65)
<i>Chloroceryle aenea</i>			U		M, 13(1); F, 14(1)
<i>Notharchus macrorhynchus</i>	R	R			M, 110(1); F, 129(1)
<i>Notharchus tectus</i>	R				M, 40(1); F, 40(1)
<i>Nonnula ruficapilla</i>	R	R	U		M, 15(3:15-15) ± 0.0; F, 15.7(6:14-17) ± 1.3
<i>Monasa nigrifrons</i>			FC		M, 69.6(4:67-74.5) ± 3.4; F, 80(1)
<i>Monasa morphoeus</i>	FC	FC			M, 82(4:80-84) ± 1.6; F, 87.7(5:81-92) ± 8.1
<i>Chelidoptera tenebrosa</i>			FC	FC	M, 37(1); F, 41.5(2:41,42)
<i>Brachygalba lugubris</i>		R			F, 19.3(3:17-23) ± 3.2
<i>Galbula dea</i> **			R		
<i>Galbula ruficauda</i>				U	M, 21.5(2:21,22); F, 22(1)
<i>Capito dayi</i> **		R			
<i>Selenidera gouldi</i>		R	R		M, 172(1); F, 180(2:172,188)
<i>Pteroglossus inscriptus</i>	R	U	R		M, 126(1); F, 122.3(3:116-126) ± 5.5
<i>Pteroglossus bitorquatus</i>		U	R	R	M, 146(6:131-171) ± 16.0; F, 149(3:136-162) ± 13.0
<i>Pteroglossus castanotis</i>		U			M, 268(1)
<i>Ramphastos vitellinus</i> *	FC	FC	FC	R	
<i>Ramphastos tucanus</i>	FC	FC	FC		M, 285(2:285,285)
<i>Picumnus aurifrons</i>		U	U		M, 9(2:9.9); F, 9.5(2:9.5-9.5)
<i>Melanerpes cruentatus</i>	FC	FC	FC		M, 65.8(2:65,66.5); F, 60(1)
<i>Veniliornis affinis</i>	U	U	U		M, 37.3(3); F, 40(2)
<i>Piculus flavigula</i>			R		M, 62.3(2:63-71.5)
<i>Piculus chrysochloros</i>	R		R		M, 74(1); F, 84(1)
<i>Celeus flavus</i> **			R		
<i>Celeus torquatus</i>	R		R		M, 131.5(2:128,135)
<i>Campephilus rubricollis</i>	U	U	R		M, 232(1); F, 200(1)
<i>Dendrocincla fuliginosa</i>	FC	FC	FC		M, 34.9(18:30-39) ± 2.8; F, 33.1(7:27-41) ± 5.1
<i>Dendrocincla merula</i>	U	U	U		M, 41.3(6:34.5-45) ± 3.7; F, 37.8(4:29-41) ± 5.6
<i>Glyphorhynchus spirurus</i>	U	FC	U		M, 13.6(19:12-17) ± 2.6; F, 13.5(6:12.5-15.5) ± 1.7
<i>Nasicia longirostris</i> **			R		F, 118(1)
<i>Hylexastestus perrotii</i>	R				M, 66(1); F, 71(1)
<i>Dendrocolaptes concolor</i>	U		U		M, 36(2:35-37); F, 34(1)
<i>Xiphorhynchus picus</i>	U	U	R		M, 30(3:29-32) ± 1.7; F, 28.9(4:25-36) ± 4.9
<i>Xiphorhynchus obsoletus</i>	U	U			M, 34.5(8:31-38) ± 2.0; F, 30.4(5:29-33) ± 1.7
<i>Xiphorhynchus elegans</i>	FC	FC	U		M, 64.3(3:60-69) ± 4.5; F, 63(2:59,67)
<i>Xiphorhynchus guttatus</i>	U	U	R		F, 22.5(2:22,23)
<i>Lepidocolaptes albolineatus</i>	U		R		
<i>Synallaxis gujanensis</i> *	U	U	FC		M, 16.8(7:15-19) ± 1.4; F, 15.3(3:15-16) ± 0.6
<i>Synallaxis rutilans</i>					F, 24.5(1)
<i>Philydor pyrrohodes</i>			R		
<i>Automolus ochrolaemus</i>		U	R		M, 32.8(4:30-37) ± 0.3; F, 30(1)
<i>Xenops minutus</i>	U	U	U		M, 11.9(4:11.5-13) ± 0.8; F, 11.3(2)
<i>Sclerurus rufigularis</i>		R	R		
<i>Taraba major</i>			U		M, 52.3(3:51-54) ± 1.5;
<i>Thamnophilus aethiops</i>	FC?	FC?	U?		M, 23.2(7:22-25.5) ± 3.1; F, 23.1(3:20-26) ± 3.1
<i>Thamnophilus schistaceus</i>	R	U	R		M, 18.3(3:18-19); ± 0.6; F, 17.9(5:17-19.5) ± 1.0
<i>Thamnophilus amazonicus</i>	U	U	U		M, 19.4(7:14-22) ± 3.0; F, 18.1(5:16-19) ± 1.2
<i>Pygiptila stellaris</i>			R		M, 23(1); F, 22(1)
<i>Thamnomanes saturrinus</i>	U	U	R		M, 20.0(2:19,21); F, 20(2:18,22)
<i>Myrmotherula brachyura</i> *	R?				
<i>Myrmotherula surinamensis</i>		U			M, 8.3(3:8-9) ± 0.6; F, 8(1)

	Sites				Body weights (gm)
	1	2	3	4	
<i>Myrmotherula hauxwelli</i>		U			M, 10(2.9,11); F, 9.9(4.9.5-11.5)±1.1
<i>Myrmotherula leucophthalma</i>	U				M, 12.2(3:10-16)±3.3; F, 10.0(2.9,11)
<i>Myrmotherula axillaris</i>		U	U		M, 7.9(4.6.5-8.5)±0.9; F, 7.3(4.6.5-8)±0.6
<i>Myrmotherula menetriesii</i>	U				M, 9(2.9,9)
<i>Herpilochmus rufimarginatus**</i>		R			
<i>Cercomacra cinerascens</i>	U	FC	FC		M, 17.2(2:16,18.4)
<i>Cercomacra nigrescens</i>			FC		M, 18.9(6:17-20)±1.2; F, 19.8(10:15-25)±4.5
<i>Pyroglena leuconota</i>	R	R	R		M, 29.5(2:29,30); F, 28(2:28,28)
<i>Myrmoborus leucophrys</i>			R		M, 19(1)
<i>Hypocnemis cantator</i>	FC	FC	FC		M, 12.8(7:11-15)±1.3; F, 12.3(8:11-14)±1.2
<i>Hypocnemoides maculicauda</i>	R		U		M, 12.5(3:12-13)±0.5; F, 13(2:13,13)
<i>Sclateria naevia</i>		R	U		M, 20(1); F, 20(6:18-20.5)±1.3
<i>Myrmeciza hemimelaena</i>	C	C	C		M, 13.8(12:12-15)±1.2; F, 13.8(12)±0.6
<i>Myrmeciza atrothorax</i>	FC	FC	U		M, 16.5(6:15.5-18)±1.5; F, 17.0(6:14.5-18)±1.5
<i>Hylophylax punctulata</i>		U			M, 12(3:12-12)±0.0; F, 13(2:13,13)
<i>Hylophylax poecilonota</i>	FC	FC	FC		M, 17.3(12:15.5-20)±1.5; F, 18.5(18:16-21)±1.7
<i>Phlegopsis nigromaculata</i>	R	R			M, 46(3:43-48)±2.6; F, 44.8(4:42-47)±2.2
<i>Formicarius colma</i>			FC?		M, 45(1)
<i>Zimmerius gracilipes*</i>			R		
<i>Tyrannulus elatus</i>			R		
<i>Ornithion inerme*</i>			U		
<i>Camptostoma obsoletum*</i>		U	U		
<i>Sublegatus modestus</i>		R?			M, 11.5(1)
<i>Myiopagus gaimardii</i>	FC	FC	FC		M, 10.6(3:9-12)±1.4; F, 11(1)
<i>Myiopagus viridicata</i>	R	R			M, 11.3(2:10.5,12)
<i>Elaenia flavogaster</i>	R	R			M, 24(1); F, 22(1)
<i>Elaenia parvirostris</i>		R			M, 17(1)
<i>Inezia inornata</i>		R			
<i>Inezia subflava</i>			R		
<i>Euscarthmus melacoryphus</i>	U	R			F, 6.5(4.6-7)±0.4
<i>Mionectes oleagineus</i>	U	U	R		M, 11.2(8:10-12)±0.7; F, 10.8(6:8.5-12)±1.5
<i>Leptopogon amaurocephalus</i>	U	U	U		M, 11.5(6:10-13.5)±1.5; F, 10.1(4.9-11.5)±1.3
<i>Corythopsis torquata</i>	U	U	U		M, 14.9(9:13-17.5)±1.3; F, 13.7(3:13-15)±1.2
<i>Myiornis ecaudatus*</i>		R			
<i>Hemitriccus minor</i>	C	C	C		M, 7.4(12:6.5-8)±0.6; F, 7.3(2:6.5,8)
<i>Hemitriccus flammulatus</i>		R	R		M, 9.5(1); F, 9(1)
<i>Hemitriccus striaticollis</i>		R	R		F, 7(1)
<i>Ramphotrigon ruficauda</i>	R	R	R		F, 18.3(4:17-20)±1.5
<i>Tolmomyias assimilis</i>	R	U	R		M, 17.3(2:17,17.5)
<i>Onychorhynchus coronatus</i>	R	R			M, 14(1); F, 11.5(1)
<i>Terenotriccus erythrorus</i>	U	U			M, 7.8(1)
<i>Lathrotriccus euleri</i>	U	U	R		M, 9(1); F, 9.5(2.9,10)
<i>Cnemotriccus fuscatus</i>	U	U	FC		M, 12(7); F, 10.8(10)
<i>Pyrocephalus rubinus</i>	U		U		M, 12.3(2:12,12.5); F, 13(1)
<i>Hirudinea ferruginea</i>		R			M, 28(1)
<i>Attila bolivianus</i>		R			F, 35(1)
<i>Attila spadiceus</i>		U			M, 31(1); F, 35.7(3:35-36)±0.6
<i>Casiornis rufa</i>	U	FC	U		M, 20.9(5:19-23.5)±1.7; F, 20(2:19,21)
<i>Rhytipterna simplex</i>		R	R		F, 32.5(1)
<i>Laniocera hypopyrrha</i>	R	R	R		M, 43(2:43,43); F, 42(1)
<i>Myiarchus tuberculifer*</i>	U	FC			
<i>Myiarchus swainsoni**</i>		R	R		
<i>Myiarchus tyrannulus</i>	FC	FC	FC		M, 26.7(5:26-28)±0.7; F, 27.1(4:25.5-30)±2.0
<i>Pitangus lictor*</i>			R	U	
<i>Pitangus sulphuratus</i>	R		U	C	M, 53(1); F, 53.8(2:53,54.5)
<i>Megarhynchus pitangua</i>	FC	FC	U		M, 62.5(3:56-69)±6.5; F, 61.2(3:58-67)±5.1
<i>Myiozetetes cayanensis</i>			R		M, 30(1)
<i>Myiodynastes maculatus</i>	R	R	R		M, 45.5(1); F, 47(1)
<i>Tyrannus melancholicus*</i>	R		R	R	
<i>Pachyramphus viridis</i>			R		M, 18(1)
<i>Pachyramphus polychopterus</i>		R			
<i>Pachyramphus minor</i>	R	R	R		M, 39.5(2:39,40)
<i>Pachyramphus validus</i>	R				M, 38(1)
<i>Tityra cayana</i>	U	FC	R		M, 78(1); F, 76(1)
<i>Schiffornis turdinus</i>	U	U	U		M, 29.8(10:27-31.5)±1.5; F, 29.7(5:27-34.5)±2.8
<i>Heterocercus linteatus</i>			U		M, 22(4:21-22.5)±0.7; F, 22(4:21-24)±1.4

	Sites				Body weights (gm)
	1	2	3	4	
<i>Neopelma sulphureiventer</i>			U		M, 18(2); F, 13.7(2)
<i>Macheropterus pyrocephalus</i>	FC		C		M, 8.7(15.8-9.5)±0.5; F, 8.7(17.8-10)±0.7
<i>Manacus manacus</i>	R	R	R		F, 14.3(2:13.5,15)
<i>Chiroxiphia pareola</i>	R				F, 20(1)
<i>Pipra nattereri</i>	FC	U	U		M, 7.8(6:7-9)±0.8; F, 8.6(9:8-9.5)±0.6
<i>Pipra fasciata</i>	U	C	C		M, 15.7(12:14-17)±0.8; F, 15.7(35:14-19)±1.3
<i>Pipra rubrocapilla</i>	FC	U	U		M, 12.8(11:12-14)±0.7; F, 13.2(13:12-15)±0.8
<i>Lipaugus vociferans</i>	FC	FC	R		M, 86.3(3:85-89)±2.3
<i>Gymnoderus foetidus</i>	R	R	R		F, 230(3:222-238)±8.0
<i>Cephalopterus ornatus</i>	R		R	R	F, 440(1)
<i>Tachycineta albiventer</i>			U	C	M, 17(1); F, 17(1)
<i>Progne tapera</i> *			C		
<i>Atticora fasciata</i>			FC	U	M, 14(1)
<i>Stegidopteryx ruficollis</i>			FC	C	M, 15.4(4:14.5-17)±1.1
<i>Thryothorus genibarbis</i>	C	C	C		M, 18.8(2:18,19.5); F, 16.5(3:16-17)±0.5
<i>Thryothorus guarayanus</i>			R		M, 13(1); F, 14(1)
<i>Donacobius atrocapillus</i>			R		
<i>Turdus amaurochalinus</i>	C	C	C		
<i>Turdus fumigatus</i>	R	R			M, 64(2:63,65); F, 62.5(2:62,63)
<i>Turdus albicollis</i>	R	R			M, 47(1); F, 43(1)
<i>Ramphocaelus melanurus</i>			R		M, 9.5(1)
<i>Cyclarhis gujanensis</i>	U	U			M, 27(1); F, 28(1)
<i>Vireo olivaceus</i>	C	C	C		M, 13.3(3:12-15)±1.5; F, 12(1)
<i>Hylophilus thoracicus</i> **			R?		
<i>Hylophilus hypoxanthus</i> **	FC	FC	FC		
<i>Hylophilus semicinerus</i>			U		M, 13(1)
<i>Anmodramus humeralis</i>	U				M, 16(1)
<i>Sporophila schistacea</i>			C		M, 12.3(4:12-13)±0.5
<i>Sporophila sp.</i>		R			
<i>Arremon taciturnus</i>			R		F, 22(1)
<i>Coryphospingus cucullatus</i>		U			M, 15(1); F, 13.5(1)
<i>Paroaria gularis</i>			R	U	M, 25.5(1)
<i>Saltator maximus</i>			R	FC	M, 43.4(7:39-46)±5.6; F, 39.7(7:30-43.5)±4.6
<i>Cyanocopsa cyanoides</i>	U	R	FC		M, 26.1(4:25-27)±0.8; F, 24.2(4:22-29)±3.3
<i>Schistoclamys melanopsis</i>	R				M, 31(1)
<i>Thlypopsis sordida</i> *				R	
<i>Hemithraupis guira</i>			FC		M, 12.3(2:12,12.5)
<i>Hemithraupis flavicollis</i>	R	R			M, 13(1); F, 16(1)
<i>Eucometis penicillata</i>	R	FC	U		M, 25.3(5:22.5-27)±1.7; F, 27.8(2:25,30)
<i>Tachyphonus cristatus</i>	R	R	R		M, 18.5(1); F, 20(1)
<i>Tachyphonus luctuosus</i>	R	U			M, 12.5(1)
<i>Habia rubica</i>			U		M, 34.5(2:33,36); F, 35.5(1)
<i>Ramphocoelus carbo</i>	U	U	C		M, 24.5(8:23-27)±1.5; F, 22.6(5:22-23)±0.6
<i>Thraupis sayaca</i>	U	FC	R		M, 29.3(2:27,31.5)
<i>Thraupis palmarum</i>		FC	U		
<i>Euphonia chlorotica</i> **			R		
<i>Euphonia laniirostris</i>	U	U			M, 16.3(2:16.0,16.5)
<i>Euphonia musica</i>			R		M, 13(1)
<i>Euphonia chrysopasta</i>	U	R			M, 16(3:15-16.5)±0.5; F, 14(1)
<i>Euphonia minuta</i>			U		M, 8.8(3:8-10)±1; F, 10(1)
<i>Euphonia mesochrysa</i>			R		
<i>Euphonia rufiventris</i>		R			M, 15(1)
<i>Tangara mexicana</i>	U	U	R		M, 20(1); F, 19.8(2:19.5,20)
<i>Tangara chilensis</i>	C	FC	R		M, 21.8(3:20-23)±1.6; F, 19.5(2:18,21)
<i>Tangara gyrola</i>	U	U	R		M, 17.8(4:17.5-19)±0.3
<i>Tangara nigrocincta</i>	R		R		M, 15(2:15,15)
<i>Dacnis lineata</i>	R		R		M, 12.5; F, 11(1)
<i>Dacnis cayana</i>	FC	FC	U		M, 14.5(6:14-16)±0.8; F, 16.5(2:15,18)
<i>Chlorophanes spiza</i>	C	FC	U		M, 17.3(3:16-19)±1.6
<i>Cyanerpes cyaneus</i>			R		M, 10(1)
<i>Tersina viridis</i>			U		M, 26(2:26,26); F, 29(1)
<i>Parula pitiayumi</i> *	FC	U			
<i>Granatellus pelzelni</i> **			R		
<i>Basileuterus culicivorus</i>			U		M, 11(1)
<i>Phaeothlypis rivularis</i>			U		M, 9.3(2:9.0,9.5)
<i>Conirostrum speciosum</i> *			R		
<i>Coereba flaveola</i>				FC	
<i>Psarcolius decumanus</i> *				R	M, 9.3(3:9.0-9.5)±0.4; F, 7.9(4:7-8.5)±0.6
<i>Psarcolius yuracares</i>	U	U			M, 430(1)
<i>Cacicus cela</i>			FC	U	M, 102(1)

BOOKS RECEIVED

Vincent, J. 1989. *Web of Experience. An autobiography*. Pp. 365. Photographs, 2 Appendices and Index. Privately printed. Obtainable from the author, Col. Jack Vincent, PO Box 44, Mooi River, 3300 South Africa. Hardback £7.50, soft cover £6.50; surface mail free, airmail £5 extra.

Colonel Jack Vincent, aged 85, Corresponding and later Honorary Life Member of the British Ornithologists' Union, has written an autobiography that is well titled "A Web of Experience" as it covers a varied and outstandingly successful life in many fields. Farming in Sussex and Natal; collecting birds for the British Museum and for Admiral Lynes; running a highly successful clove processing plant in Zanzibar; soldiering in East Africa and the Middle East; building up and developing the Natal game reserves, including pioneering the use of tranquillising darts for capturing white rhino; working worldwide for the ICBP from Switzerland.

The author's interest in birds and all forms of animal life runs through every chapter, but of outstanding interest to ornithologists are those describing his field trips with Admiral Lynes in search of cisticolas required for the proposed Supplement to the 1930 Monograph. Lynes could hardly have found a more perfect assistant—a young man who was equally uncompromising in the pursuit of excellence and who shared his dedication to the task in hand (much of which entailed unpleasant wet season travel on bush roads), characteristics which reappear constantly throughout Jack Vincent's long life. It was a tragic loss to the bird world that Lynes died during the last war before the Supplement could be completed and that his notes, bequeathed to his assistant, were controversially never found.

Older ornithologists will meet many friends and familiar names in these pages; younger readers will have an introduction to a naturalist and colonist of the old school. All will find the book intriguing and packed with amusing and revealing anecdotes. Their enjoyment will be enhanced if they have access to copies of past *Ibis* which contain the scientific papers and maps of the collecting trips or if they can see the immaculate skins and labels in the BMNH.

Giraudoux, P., Degauquier, R., Jones, P. J., Weigel, J. & Isenmann, P. 1988. *Avifaune du Niger: etat des connaissances en 1986*. Pp. 140. *Malimbus* 10(1) June. Price £5 or 60Fr. (Available from Dr H. Q. P. Crick, BTO, Beech Grove, Tring, Herts, HP23 5NR, or Dr G. J. Morel, route de Sallenelles, Bréville-les-Monts, 14860 Ranville, France.)

This special issue of the Journal of the West African Ornithological Society is a comprehensive annotated check-list of the birds of Niger. It is wholly in French, but the birds are also given their English names. A map shows the 9 ecological zones used in the distribution of each species, and these are described in 2 pages. The bibliography contains 52 entries and there is a (essential) gazetteer.

Goodman, S. M. & Meininger, P. L. (Eds) 1989. *The Birds of Egypt*. Pp. xxi + 551. 6 coloured plates; photographs, graphics, breeding and locality maps. Oxford University Press. Hardback. 25 × 19 cm. £70.00.

This expensive, attractively produced and well researched book will undoubtedly be the main source by which to judge the Egyptian avifauna for the next several decades. An explanatory and historical introduction is followed by sections on the geographical environments, conservation, bird hunting and responses to changing habitats. The bulk of the book deals comprehensively and in detail with those species which are considered as having definitely occurred in Egypt, in systematic order. Each species is given its local names in Arabic and transliterated. There are 5 inch square maps of breeding distribution, while the text mainly concentrates on distribution details and breeding data. All ringing data are given when known. There is a long gazetteer, 70 figures/photographs, and 27 pages of references. The colour plates, by Sherif M. Baha el Din, include 41 species in good likenesses. An important addition to Middle East avifaunal literature.

Pennycuik, C. J. 1989. *Bird Flight Performance. A practical calculation manual*. Pp. x + 153. Many figures, several photographs and diagrams, and an IBM-compatible computer disc. Oxford University Press Hardback. 24 × 16 cm. £25.

The author, well known for his erudite studies of bird flight, has produced this specialised manual, written with avoidance of too much jargon, with a view to "apply elementary aeronautics to birds' problems, and at the same time to avoid letting the discussion degenerate into an arcane form of witchcraft, accessible only to high priests with supercomputers". The book is a distillation of ideas and knowledge gained over many pioneering years.

Johnsgard, P. A. 1989. *North American Owls. Biology and natural history*. Pp. 295. 23 coloured plates; 10 watercolours by L. A. Fuytes; line drawings; 52 figures and maps. Smithsonian Institution Press (Eurospan Group of Publishers, Covent Garden, London). Hardback. 26 × 18 cm. £32.50.

The author, already rightly well known for several monographs of North American bird families (including the hummingbirds), has here turned his attention to the owl species which breed north of Mexico. The first part of the book deals with the comparative biology of owls, including evolution, ecology, morphology and physiology, behaviour, reproductive biology, and lastly owls in myth and legend. Part 2 deals with the natural history of 19 species and their distribution. In 3 appendices there are keys to genera and species and to structural variation in the external ears of the group; description of calls, with diagrammatic sonograms; and the origins of the species' scientific and vernacular names. A glossary occupies 15 and the references 19 pages. The watercolours of Fuytes are an additional attraction to a well produced and expertly researched monograph.

Turner, A. & Rose, C. 1989. *A Handbook to the Swallows and Martins of the World*. Pp. viii + 258. 24 colour plates; 74 maps. Christopher Helm. Hardback. 24 × 15 cm. £19.95.

The introductory sections of this monograph (the first review it is extravagantly claimed by the publishers since Bowdler Sharpe & Wyatt's 1885-1894 monograph of the Hirundinidae) cover briefly the morphology and plumage, classification, distribution and migration, food and foraging, behaviour, breeding population and conservation of 74 species. Each is then dealt with in detail under the same headings and additionally under voice, measurements and subspecies. There are 21 pages of references. Chris Rose's illustrations appear accurate and are nicely drawn. The text reveals the considerable research the author must have done on this family both for her doctorate and since.

Bundy, G., Connor, R. J. & Harrison, C. J. O. 1989. *Birds of the Eastern Province of Saudi Arabia*. Pp. 224. Profusely illustrated in colour. Witherby (in association with Saudi Aramco). Hardback. 28 × 22 cm. £35.00.

A sumptuous production with some lovely coloured photographs by G. K. Brown, A. L. Litke and B. Stanaland illustrating well over 300 species confidently recognised as having occurred in this arbitrary division of the Arabian Peninsula; only rare visitors are likely to be added to the list in the future. Introductory sections deal with topography and landscape, climate, vegetation, and the origins of the avifauna of the Eastern Province since the Miocene. Further discussion centres on adaptations of birds to harsh desert and other biotopes, habitats, migration, and on man's impact and predation and the resulting changes. The systematic section follows, dealing mainly with distribution and abundance and with breeding data (if any). There is a full status list of species in one Appendix and of passage migrants in another. The references are under different headings and there is a gazetteer. The coloured illustrations and colours are up to the high standard expected in this type of eye-catching production, but should not be allowed to distract from an informed text.

Dunning, J. S. 1989. *South American Birds. A photographic aid to identification*. Pp. xvi + 351. Over 1400 colour photographs. Harewood Books, PA. 23 × 15 cm. Paperback \$35.00, hardback \$47.50.

The author sadly died on 31 December 1987 at the age of 81 before he had seen the completion of this book, a culmination of his 25 years photographing wild birds which he had caught and then placed in tents on the spot together with their natural habitat's vegetation, there to photograph them from outside the tent when they had settled down. The book follows up his 1982 *South American Land Birds*, and has again been finalised by Robert S. Ridgely, who has created the distribution maps and compiled identification information for the text. Some 2700 species of inland land and water birds are described. The 1400 photographs illustrate 1352 species and though the photos are only 4 × 4 cm or less, their clarity is surprisingly adequate.

Meyburg, B.-U. & Chancellor, R. D. (Eds.) 1989. *Raptors in the Modern World*. Pp. 611. Line drawings and diagrams. WWGBP. Soft covers. 23 × 16 cm. No price.

These are the Proceedings of the III World Conference on Birds of Prey and Owls held at Eilat, Israel, 22-27 March 1987, attended by nearly 400 participants from 30 countries and 5 continents. The 9 parts cover migration, population biology and breeding conservation, the migration and wintering of rare raptors and rare owls, pollution of their environments, habitat analysis, promotion of legislation and education. The text ends with the resolutions passed at the ICBP meetings held there at the same time.

Stroud, D. A. (Ed.) 1989. *Birds on Coll and Tiree. Status, habitats and conservation*. Pp. 191. Photocopy photographs, drawings. Scottish Ornithologists' Club/Nature Conservancy Council, Edinburgh. Soft covers. £6.50.

A useful descriptive survey of 2 Inner Hebridean Islands covering their habitats available to birds, the agriculture, a study of the distribution of breeding waders, waterfowl and sea birds, as well as wintering coastal waders and wildfowl. The survey is in response to a possibility of the islands being affected by agricultural intensification and drainage as the result of an ECC grant-aided Agricultural Development Programme. Such research epitomises the conflicting choices between improving human living standards and conserving diminishing natural unspoiled habitats.

Nelson, B. 1989. *The Gannet*.

Tate, P. 1989. *The Nightjar*.

Taylor, I. R. 1989. *The Barn Owl*.

Garcia, E. 1989. *The Blackcap and the Garden Warbler*.

Simms, E. 1989. *The Song Thrush*.

All Pp. 24 with many coloured and black-and-white photographs. Shire Publications. £1.95. Soft covers. 15 × 21 cm.

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